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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,609	11/03/2002	Tsung-Wei Huang	ACMP0021USA	2457
27765	7590	06/21/2004	EXAMINER	
NAIPO (NORTH AMERICA INTERNATIONAL PATENT OFFICE)			BROOKE, MICHAEL S	
P.O. BOX 506			ART UNIT	
MERRIFIELD, VA 22116			PAPER NUMBER	
			2853	

DATE MAILED: 06/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/065,609	Applicant(s) HUANG ET AL.	
	Examiner Michael S. Brooke	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05/25/04.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4, 8, 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hawkins (4,935,752) in View of Fujita (5,666,142).

With respect to claim 1, Hawkins teaches (Fig. 5): a substrate (15), a bubble generator (41), a first conductive trace (38) that is made of polysilicon and a second conductive trace that supplies electrical signal to the bubble generator. While not specifically shown, the second conductive trace would necessarily be connected to a driving element that supplies the electrical signals to the bubble generator.

With respect to claim 4, Hawkins teaches a dielectric layer (27) (col. 6:10-11) that is disposed between the first and second conductive traces.

With respect to claim 8, Hawkins teaches that the second conductive trace is made of aluminum (col. 6: 14-15).

With respect to claim 9, Hawkins teaches a chamber that is connected to a manifold (20) and that has (e.g., see Fig. 2) a nozzle (14).

With respect to claim 12, Hawkins teaches that the ink is provided by an ink supply. This ink supply would be considered to be a cartridge.

Hawkins teaches the claimed invention with the exception of the functional device being positioned on the substrate.

Fujita teaches an ink jet print head that has MOS transistor functional devices and the bubble generators formed on the same substrate for the purpose of forming a plurality of semiconductor devices with characteristics of a high withstand voltage and with good electric separability between each device (col. 11:35-58).

It would have been obvious to one of ordinary skill in the ink jet art at the time the invention was made, to have provided Hawkins with a functional device that is formed on the same substrate as the bubble generator, in order to form a plurality of semiconductor devices with characteristics of a high withstand voltage and with good electric separability between each device, as taught by Fujika et al.

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hawkins (4,935,752) in View of Fujita (5,666,142), as applied to claims 1, 4, 8, 9 and 12 above, and further in view of Ozaki et al. (6,402,302).

Hawkins, as modified, teaches the claimed invention with the exception of a contact layer positioned between the first and second traces and wherein the second trace has at least one pad.

Ozaki teaches that it is well known in the ink jet art use electrical connection pads for the purpose of electrically connecting different circuit elements (col. 10:65-67).

It would have been obvious to one of ordinary skill in the ink jet art to have provided Hawkins, as modified, with electrical connection pads between the first and

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second traces for the purpose of electrically interconnecting the first and second traces, as taught by Ozaki.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hawkins (4,935,752) in View of Fujita (5,666,142), as applied to claims 1, 4, 8, 9 and 12 above, and further in view of Device Electronics for Integrated Circuits (Muller).

Hawkins, as modified, teaches the claimed invention with the exception of the functional device having a source, drain and gate and the functional device being a MOSFET with a polysilicon gate.

Muller teaches that compared with MOS transistors, MOSFETs provide the advantages of increased simplicity and higher component density (see p. 422). Furthermore, Muller teaches numerous advantages that are realized when the gate is formed from polysilicon (see p. 445).

It would have been obvious to one of ordinary skill in the ink jet art at the time the invention was made, to have provided Hawkins, as modified, with a MOSFET having a silicon gate, in order to achieve the advantages discussed in Muller.

The limitations of claim 7 are directed to the method of manufacturing the head and do not patentably limit the structure of the apparatus.

Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hawkins (4,935,752) in View of Fujita (5,666,142), as applied to claims 1, 4, 8, 9 and 12 above, and further in view of Leban (EP 317 171).

Hawkins, as modified, teaches the claimed invention with the exception of first and second bubble generating devices, wherein the first bubble generating device generates a bubble that functions as a fluid valve.

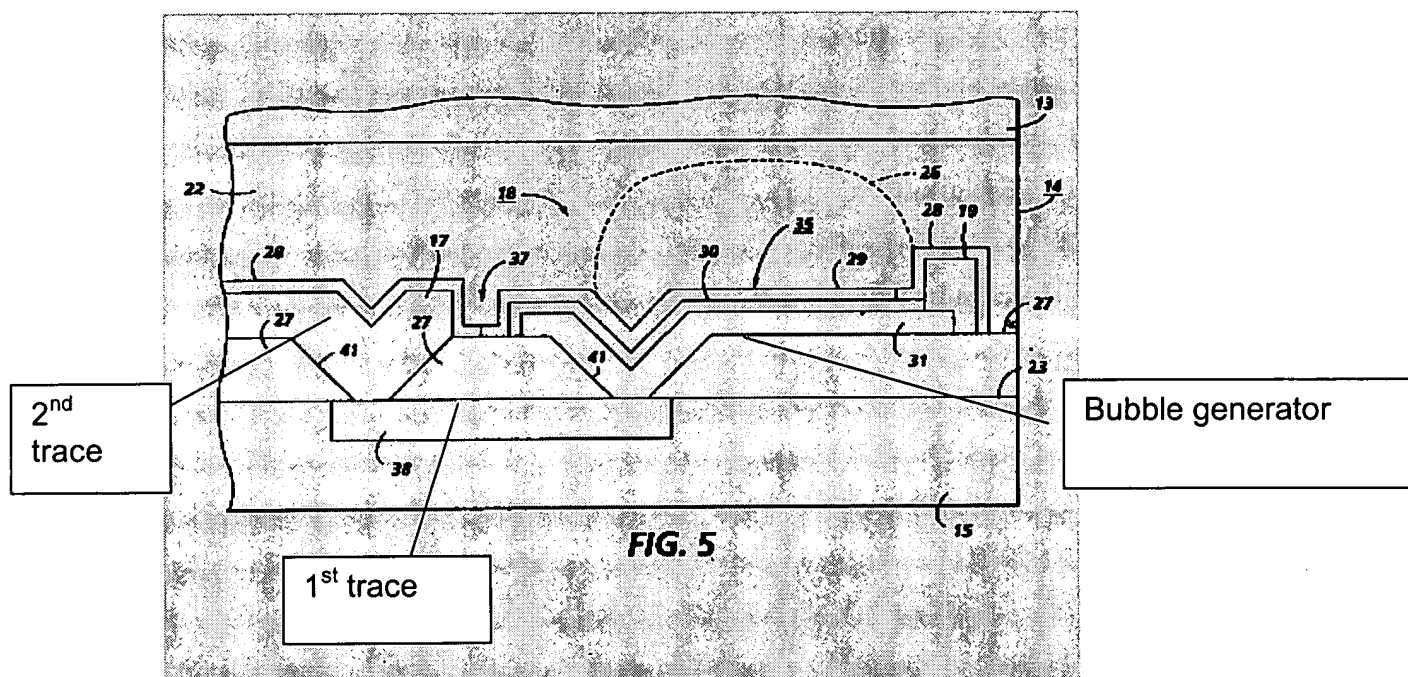
Leban teaches an ink jet print head having first and second bubble generators (18 and 20, respectively). When ink is ejected, the first bubble generator is energized to form a bubble. This bubble pushes ink into the drop ejecting chamber (16) where a droplet is ejected by the second bubble generator. The use of the first bubble generator reduces back pressure in the ink chamber (see abstract), by forming a bubble that acts as a virtual valve.

It would have been obvious to one of ordinary skill in the ink jet art at the time the invention was made, to have provide Hawkins, as modified, with the first and second drop generators of Leban, in order to improve operational frequency, reduce back pressure and to produce drops of varying sizes.

Response to Arguments

Applicant's arguments filed 05/25/04 have been fully considered but they are not persuasive.

The Applicant's argument that Hawkins fails to teach a second trace coupling the functional device with the bubble generator and coupling the functional device with the first conductive trace is not persuasive.



Looking at this figure, it can be seen that there is a first trace polysilicon trace (38) and a second trace (17) that couples a functional device with both the bubble generator and the first trace. Therefore, Hawkins meets the limitations, as claimed.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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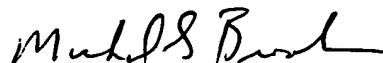
mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael S. Brooke whose telephone number is (571) 272-2142. The examiner can normally be reached on M-F from 5:30 AM-2:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael S. Brooke
Primary Examiner
Art Unit 2853

MSB
06/14/04